

12076
Olivine Basalt
54.5 grams

DRAFT□

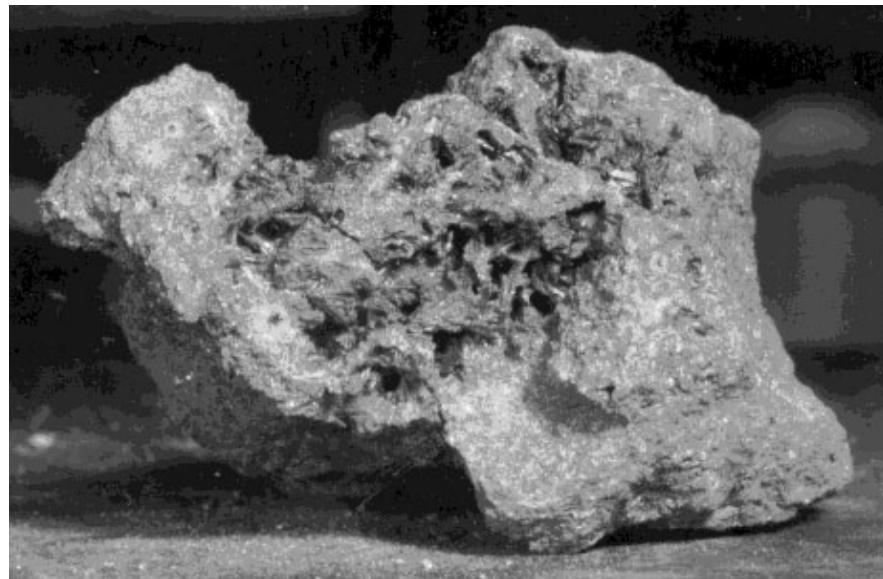


Figure 1: Photo of 12076 illustrating vugs on one side. Sample is 4 cm across. NASA # S69-61717.

Introduction

12076 is a vuggy porphyritic olivine basalt similar to 12075. Although the composition has been determined, it has not been studied petrographically. There are a few micrometeorite craters on one face.

Petrography

Champness et al. (1971) give a brief description of 12076 and compare it with 12075. These rocks are said to be similar, but 12076 has a finer-grained groundmass than 12075 (figure 3).

Large crystals (pyroxene?) define the inner surfaces of large vugs.

Chemistry

Rhodes et al. (1977) and Neal et al. (1994) have determined the chemical composition.

Other Studies

Bogard et al. (1971) reported the content and isotopic composition of rare gases in 12076.

List of Photo #'s for 12076

S69-61692 – 61739	B & W mug
S70-16776 – 16777	TS color
S70-49825 – 49826	TS
S70-49955 – 49956	TS
S70-49264 – 49265	TS

Mineralogical Mode for 12076

Neal et al. 1994	
Olivine	26.2
Pyroxene	46.8
Plagioclase	14.4
Ilmenite	4
Chromite +Usp	4
mesostasis	3.7
“silica”	0.1

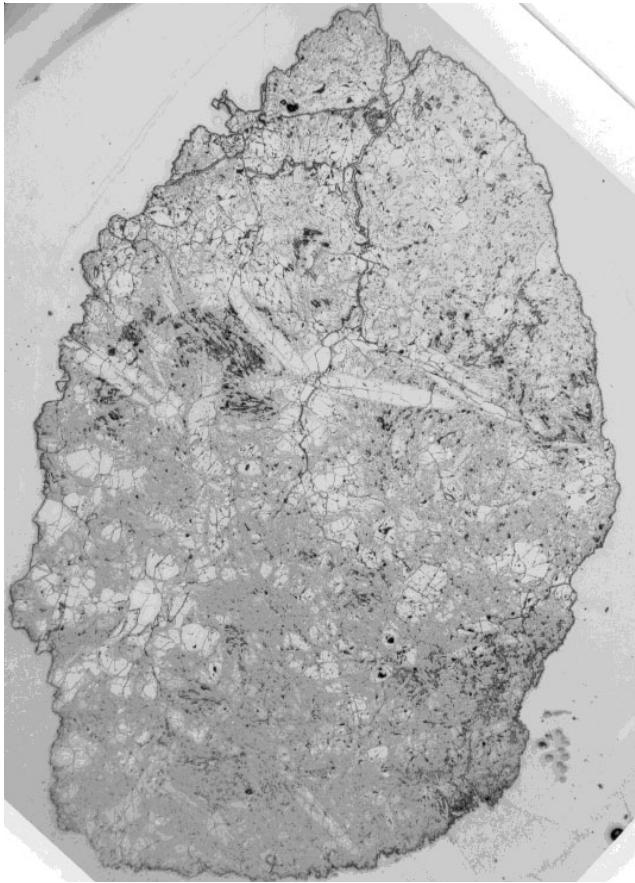


Figure 2: Reflected light photo of 12076,12 showing open spaces (vugs) between crystals. NASA # S70-49412. Length about 2 cm.

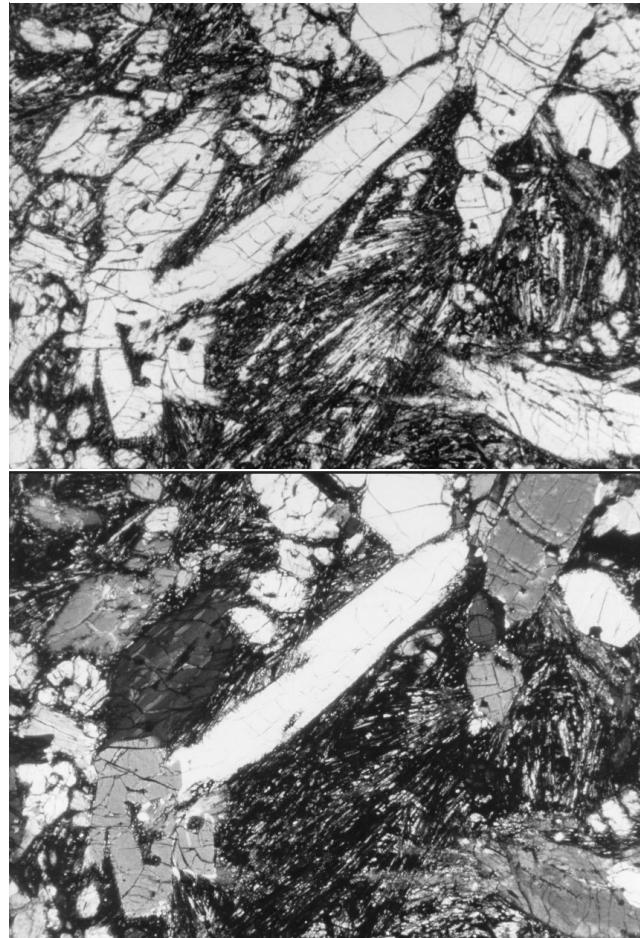


Figure 3: Photomicrographs of thin section 12076,12 (plane-polarized, crossed nicols). Field of view is 2.6 mm. NASA # S70-49264-265.

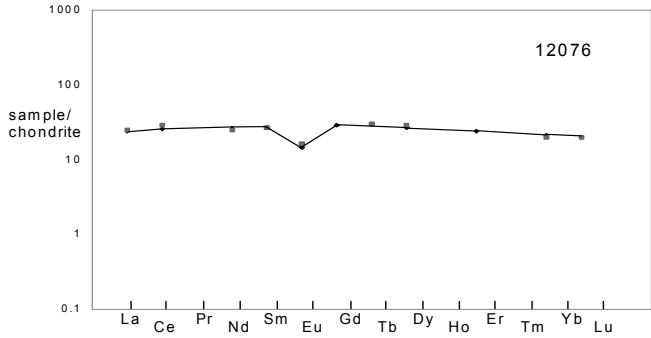


Figure 4: Normalized rare-earth-element diagram for 12076 (IDMS data by Wiesmann et al. 1975 connected by lines).

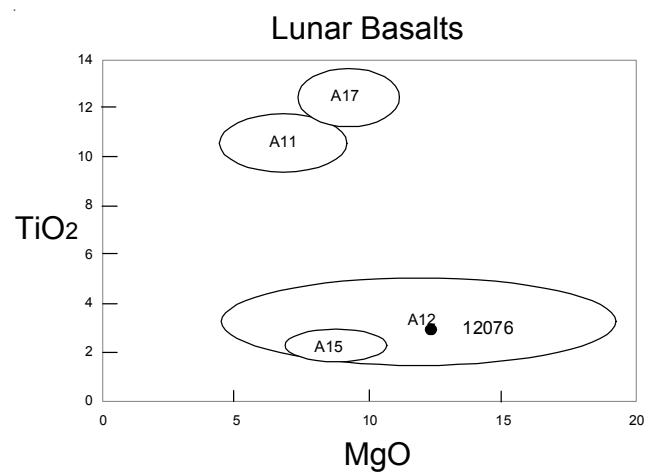


Figure 5: Composition of 12076 compared with that of other lunar basalts.

Table 1. Chemical composition of 12076.

reference	Neal94	Rhodes77	Wiesmann75
weight	.561 g	44.87	(c)
SiO ₂ %		56 mg	
TiO ₂	2.8	(a) 2.76	(c)
Al ₂ O ₃	8.5	(a) 8.1	(c)
FeO	21.2	(a) 20.66	(c)
MnO	0.257	(a) 0.3	(c)
MgO	14.6	(a) 12.26	(c)
CaO	9	(a) 9.03	(c)
Na ₂ O	0.222	(a) 0.21	(a)
K ₂ O	0.056	(a) 0.06	(c) 0.056 (d)
P ₂ O ₅		0.03	(c)
S %			
sum			
Sc ppm	47.2	(a) 46.4	(a)
V	167	(a)	
Cr	4130	(a) 4640	(a)
Co	54	(a) 54	(a)
Ni	73	(a)	
Cu			
Zn			
Ga			
Ge ppb			
As			
Se			
Rb			
Sr	94	(a) 94	1.022 (d)
Y			
Zr			108 (d)
Nb			
Mo			
Ru			
Rh			
Pd ppb			
Ag ppb			
Cd ppb			
In ppb			
Sn ppb			
Sb ppb			
Te ppb			
Cs ppm			
Ba	70	(a) 59	(b) 59.4 (d)
La	5.9	(a)	5.68 (d)
Ce	17.5	(a)	15.9 (d)
Pr			
Nd	11.4	(a)	12 (d)
Sm	4	(a) 4.03	(a) 4.03 (d)
Eu	0.92	(a)	0.825 (d)
Gd			5.67 (d)
Tb	1.08	(a)	
Dy	7	(a)	6.52 (d)
Ho			
Er			3.85 (d)
Tm			
Yb	3.3	(a) 3.4	(a) 3.39 (d)
Lu	0.49	(a) 0.51	(a) 0.492 (d)
Hf	3.2	(a)	
Ta	0.53	(a)	
W ppb			
Re ppb			
Os ppb			
Ir ppb			
Pt ppb			
Au ppb			
Th ppm	0.9	(a)	0.87 (d)
U ppm			0.23 (d)
technique	(a) INAA, (b) IDMS, (c) XRF, (d) IDMS		

